7. The ratio of the weight of Benjamin to that of Jack is 5 : 3, while the ratio of the weight of Benjamin to that of Peter is 4 : 7.

(a) Find the ratio of the weights of Benjamin, Jack and Peter. (6 marks)

Ratio of B : J : P

= 20 : 12 : 35

B : J = P

5 : 3

4 : 7

20 : 12 : 35

(b) If the weight of Jack is 30 kg, find the weights of Benjamin and Peter. (12 marks)

Or

Weight of B:

$\frac{20}{12} \times 30$ kg

= 50 kg

Weight of Peter:

$\frac{35}{12} \times 30$ kg

= 87.5 kg

8. The capacity of a swimming pool is 1 080 m^3.

(a) The pool has been empty originally and is now filled up with water at a speed of 3.6 m^3/ min by a pipe. How much water is filled in two hours? (6 marks)

2 hours have 2 × 60 = 120 min

∴ $(3.6 \times 120) m^3$ of water can be filled in 2 hours

= 432 m^3

(b) Suppose after filling the pool for two hours, the speed of water filling the pool increases to 4 m^3/ min. How long does it take to fill the swimming pool completely? (8 marks)

Volume of water need to be filled:

(1080 − 432) m^3

= 648 m^3

extra Time = $\frac{\text{distance}}{\text{speed}} = \frac{648\ m^3}{4\ m^3/\text{min}}$

= 162 min

= 2 h 42 min

∴ To fill the pool completely need 2 h 42 min + 2 h

= 4 h 42 min

or 4.7 hr.

1080 − 432 = 648

2.7

60 | 162 | 120 | 42

— End of Paper —

Name : _____ ( )

Class : _____ Date : _____

Marks : _____ /100

CHAPTER 12

Ratio and Rate

[Time allowed: 35 minutes]

1. Express the rates of the following in the units stated in the brackets.

(a) A lion eats 91 kg of meat per week. (kg/ day) (4 marks)

91 kg / week

= 91 kg / 7 days

= 13 kg / day

(b) 161 candies weigh 0.7 kg. (candies/ kg) (4 marks)

161 candies / 0.7 kg

= 161 ÷ 0.7 candies / kg

= 230 candies / kg

7 | 1610 | 14 | 21 | 230

(c) The selling price of 0.3 kg of cheese is $17.4. ($/ kg) (4 marks)

$17.4 / 0.3 kg

= $174 ÷ 3 / kg

= $58 / kg

2. It is given that the length of 2 mm on a map represents the actual length of 0.5 km. Find the scale of the map in the form of 1 : n. (8 marks)

Scale = $\frac{\text{map}}{\text{real}}$

= $\frac{2\text{ mm}}{0.5\text{ km}}$

= $\frac{2\text{ mm}}{0.5 \times 1000 \times 100 \times 10}$

= $\frac{2\text{ mm}}{500000\text{ mm}}$

= 1 : 250000

3. The selling price of 500 g of steak is $550.

(a) Find the selling price of steak in $/ g. (6 marks)

$550 / 500g
= $550 ÷ 500 /g
= $1.1/g
the selling price of steak is $1.1/g

(b) How much steak in kg can be bought for $1 650? (6 marks)

($1650 ÷ $1.1)g ÷ 1000 g
= (1500 ÷ 1000) kg
= 1.5 kg
∴ $1650 can buy 1.5 kg of steak

1500
11 | 16500
11
55

4. On a floor plan with the scale of 1 : 300, the length and width of a bedroom are 8 cm and 7 cm respectively.

(a) Find the actual dimensions of the bedroom. (Give your answer in Length × Width.) (6 marks)

the actual dimensions :
8cm × 300 by 7cm × 300
= 2400 cm by 2100 cm
= 24 m × 21 m

(b) Find the actual area of the bedroom in m^2. (6 marks)

the actual area :
24 m × 21 m
= 504 m^2

24
×21
48
24
504

5. Suppose we can exchange 4 Japanese Yen for 0.3 Hong Kong dollar and 2 Euro for 25 Hong Kong dollars.

(a) How much Hong Kong dollars can we exchange for 100 000 Japanese Yen? (6 marks)

$\frac{4}{0.3} = \frac{100000}{x}$
$x = 10000 \times \frac{0.3}{4}$
$= 7500$

Jap	HK$
4	0.3
100000	x

∴ 7500 HK dollars can be exchanged for 100 000 Japanese Yen

Japanese : Hong Kong : Euro
4 : 0.3
: 25 : 2
100 : 7.5 : 0.6
× 1000
100 000 : 7500 : 600

We can exchange 7500 HK dollars

(b) Hence, how much Euro can we exchange for 100 000 Japanese Yen? (6 marks)

$\frac{7500}{25} = \frac{x}{2}$
$x = \frac{7500}{25} \times 2$
$x = 300 \times 2$
$x = 600$

HK	Euro
7500	x
25	2

∴ 600 Euros can be exchanged for 100 000 Japanese Yen

From the above table
100000 HK dollars can exchange for 600 Euro

6. A car travelled 105 km in 1.4 hours.

(a) Find the speed of the car in km/h. (6 marks)

105 km ÷ 1.4 hours
$= \frac{105}{1.4}$ km/h
= 75 km/h
the speed of the car is 75 km/h

75
14 | 1050
98
70
70

(b) If the speed of the car increases by 5 km/ h, find its travelling distance in 45 minutes. (6 marks)

New speed = (75 + 5) km/h = 80 km/h
Distance travel = speed × time
= 80 km/h × 45 min
= 80 km/h × $\frac{45}{60}$ h
= 80 km/h × $\frac{3}{4}$ h
= 60 km
∴ the travel distance is 60km in 45 minutes